SERVICE ALBA MANUAL

AM/FM SUPERHET STEREOGRAMS.

Models

7701—7802—7903

ALBA 7701

ALBA 7903

ALBA 7802

GENERAL SPECIFICATION

Models 7701-7802-7903 employ the same chassis, but differ in respect of the types of cabinet and loudspeaker used. They are designed for normal or stereophonic record reproduction, in addition to the reception of A.M. broadcasts in the Long and Medium waves and of frequency-modulated signals in the range 87-100 mc/s (Band II). Waveband and Radio/Gram selection is by means of interlocked push-button switching.

The output from the two identical audio sections is used in parallel for radio reception and when playing 'monaural' recordings. Ganged Tone Controls are used; and the knobs of the two independently adjustable Volume Controls are friction-fitted, so that after balance between the two channels has been achieved, the adjustment of one knob controls the volume from both. Audio output is approximately 4 watts per channel.

Valves:

V1 (ECC85)—F.M. R.F. amplifier and mixer.

V2 (ECH81)—A.M. mixer/osc.; F.M. 1st I.F. amplifier.

V3 (EBF89)—A.M./F.M. 2nd I.F. amp.; A.M. detector & A.V.C.

V4 (EB91)—F.M. Ratio Detector double-diode.

V5 (ECC83)—1st audio amplifier (one half per channel).

V6, V7 (EL84)—audio output (one per channel).

V8 (EZ81)—H.T. rectifier.

CIRCUIT DESCRIPTION

A.M.

R.F. & Osc.:

Signals from the M.W. or L.W. aerial windings on the ferrox-rod are fed to the grid of the mixer section of the ECH81 (V2) via the band-change switch, the secondary winding of the F.M. Tuner I.F.T. (T1), and C18 (100 pf). R.F. tuning is by means of C17 section of the gang, with tracking trimmer C16. The fixed tuning condenser C15 is in circuit on L.W. only.

The triode portion of the ECH81 functions as oscillator. Osc. coils L6 and L5 are selected by the band-change switch for M.W. and L.W. respectively. Oscillator tuning is by means of C28 section of the gang with trimmer C27.

I.F. & Detection:

The I.F. is 470 kc/s. L9/10 and L14/15 are the A.M. I.F. transformers, shunted by the 200 pf capacitors C22, C23, C35, C37. The effect of the F.M. I.F. transformers in series with them is negligible at 470 kc/s, and they in turn have negligible effect at the F.M. I.F. of 10.7 mc/s.

Detection is carried out by one diode of the EBF89 (V3), the other being strapped to cathode. A portion of the detected signal is applied as A.V.C. to V3 and the mixer section of V2, via R16, decoupled by C30, and R6.

The H.T. feed to the F.M. Tuner valve V1 is disconnected when the receiver is set to A.M.

F.M.

R.F. & Osc.:

Signals from the F.M. aerial socket are coupled by the aerial transformer to the cathode of the first triode of the ECC85 (V1), which acts as R.F. Amplifier, permeability tuned by L1, with C3 as R.F. trimmer. The R.F. output from this valve is coupled via a bridge circuit to the second triode of the ECC85, which acts as a mixer/oscillator with a permeability tuned osc. transformer L2 and C11 as trimmer.

I.F. & Detection:

The modulated I.F. appearing at the mixer anode is coupled to the heptode section of the ECH81, which now acts as 1st I.F. amplifier, by the I.F. output transformer T1 on the Tuner. H.T. feed to the anode of the A.M. oscillator is disconnected. L7/8 and L11/12/13 are the 2nd F.M. and Ratio Detector transformers. A separate double-diode (V4, EB91) is used for detection. Detected A.F. voltages appear across C.38. R14 and C39 form the de-emphasis network.

continued over

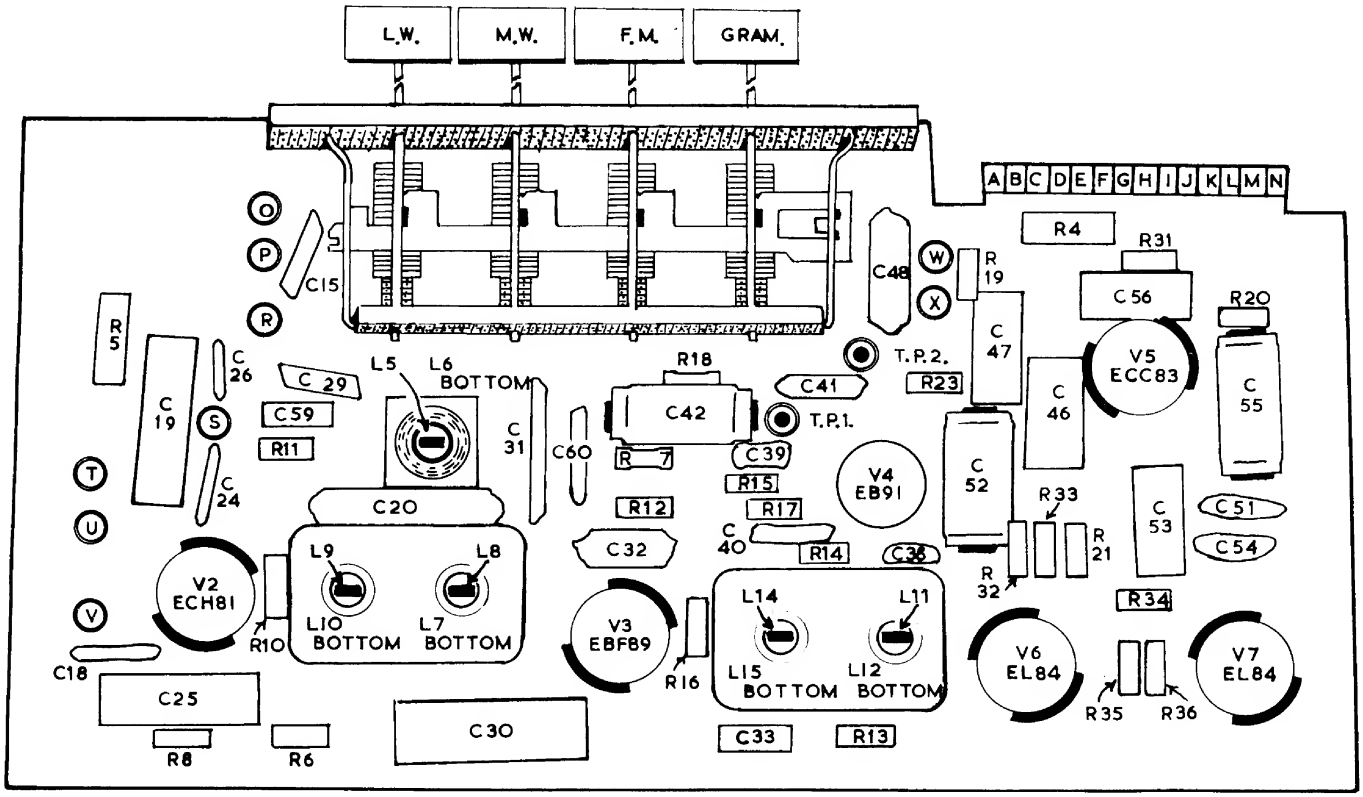
CIRCUIT DESCRIPTION (*contd.*)

AUDIO

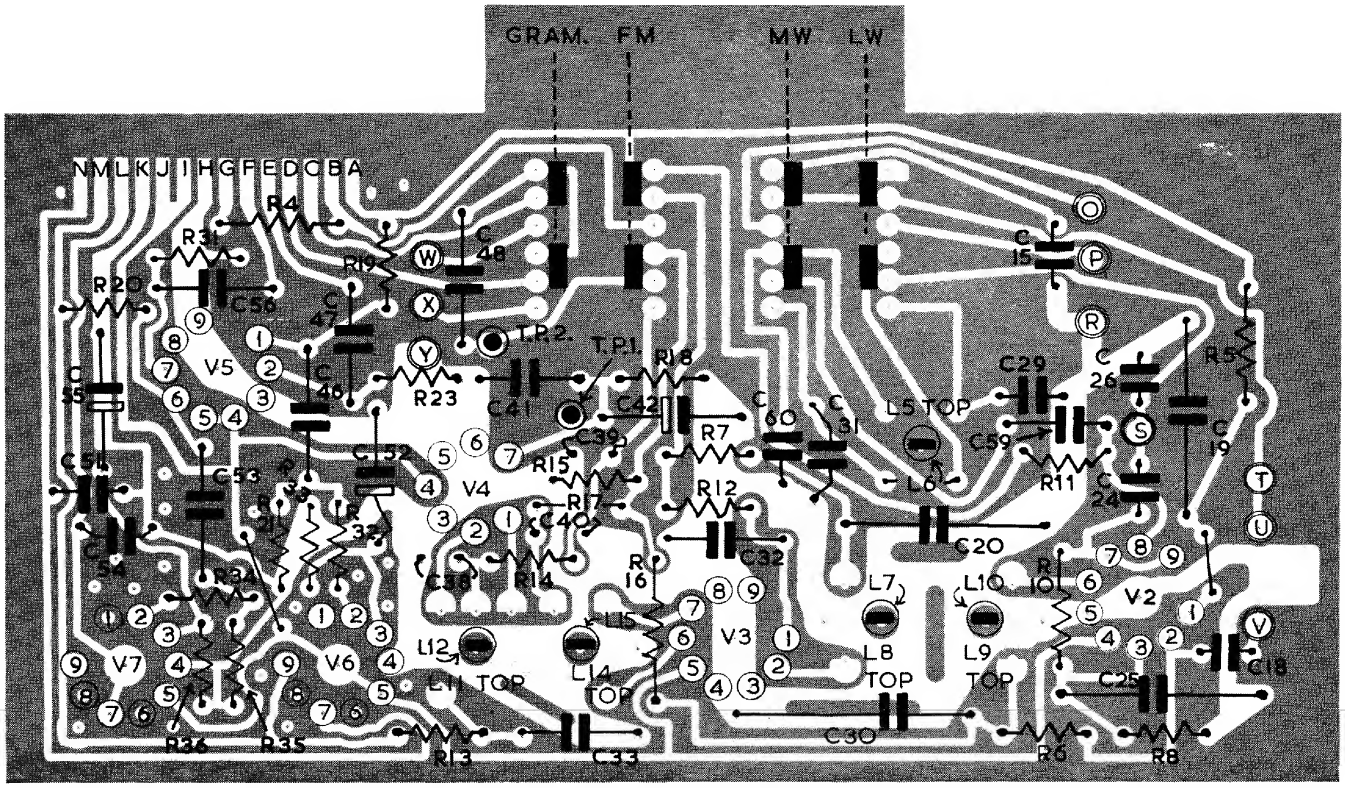
For radio reception, the 3rd section of the band-switch selects signals from either the A.M. or F.M. detectors. These signals are fed via C48 (.1μF) to the 4th (Radio/Gram) section of the switch, which selects radio or gram inputs to the audio amplifier systems. The cartridge fitted to the record-player unit is designed to be compatible for monaural and stereo recordings. For monaural playing the cartridge elements feed an identical signal into points 'W' and 'X', which are connected via the switch to the right and left-hand reproduction channels respectively. On stereo each cartridge element is separately activated via the single stylus by signals recorded on either side of the record groove.

The two channels are identical. An input selected at the Radio/Gram switch is taken to one of the Volume Controls, from whose slider it is fed via a .01μF condenser to the grid of one section of the ECC83 double-triode. Amplified signals appearing at the anode of this valve are fed to the grid of the EL84 output pentode. The 'earthy' side of the Volume Control is connected to a Tone Control network which depends on frequency selective feedback from the secondary of the O.P.T. Output impedance is 3 ohms nominal. The tape recorder socket is connected between "test point TP2" and chassis.

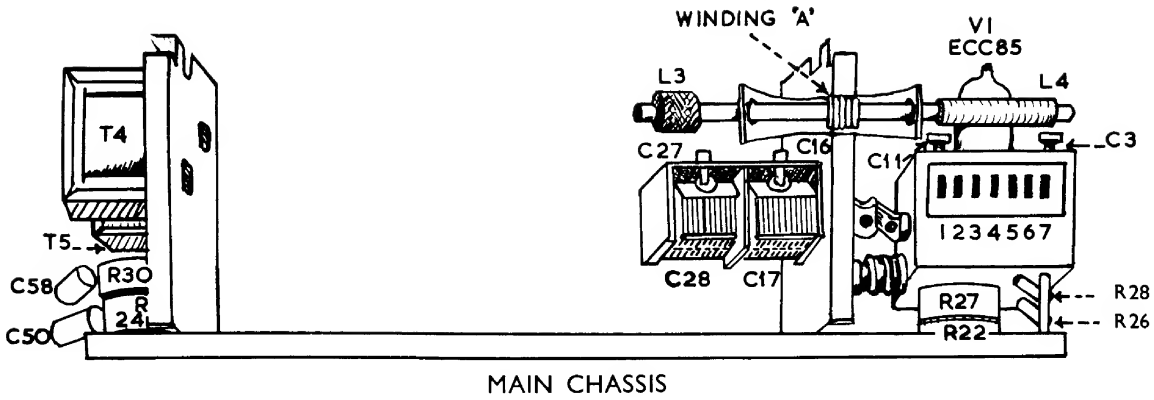
TOP VIEW OF PANEL



BOTTOM VIEW OF PANEL



Please note: C42 is shown incorrectly connected. The negative side should go to R18/C41



A.M. ALIGNMENT

First check for output on both audio channels. Then proceed as follows:—

Output meter to be connected across one O.P.T. secondary and the dummy load across the other. Both Volume Controls to be set to max. and Tone Controls fully clockwise. Input from the generator must be kept as low as possible to prevent operation of the A.V.C. **Important:** Where two tuning peaks are found, the 'outer' is the correct one.

I.F. Alignment:

(1) Signal Generator set to 470 kc/s, 30% modulated at 400 cps. Switch the receiver to M.W. with the gang fully meshed. Inject the signal from the generator at g1 of V2 (between tag 2 on the Tuner Unit and chassis) with the oscillator section of the gang shorted out, and adjust the slugs of L9, L10, L14 and L15 for maximum output. Repeat.

Calibration and R.F.:

(2) Check that the scale pointer lines up with the 'start' dot on the scale pan when the gang is fully meshed. The **shorter** leg of the pointer is used for calibration.

(3) Inject 600 kc/s modulated signal across the A.M. coupling winding 'A' on the Ferrox-rod, with the pointer set to the 500m dot, and adjust the slug of the Medium wave osc. coil L6, and the aerial coil L4 (on the Ferrox-rod) for max.

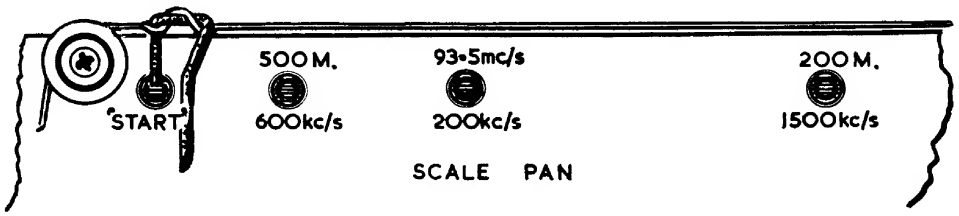
Note: On both M.W. and L.W. it is important to re-check the tuning of the appropriate osc. coil each time the aerial coil is adjusted.

(4) With the pointer set to 200m, inject 1500 kc/s and adjust trimmers C16 and C27 on the gang for max.

(5) Re-check calibration at 500m and 200m and adjust if necessary.

(6) Switch the receiver to L.W. and inject 200 kc/s signal as at (3), with the pointer set to the appropriate dot on the scale pan. Adjust the L.W. osc. coil L5 and aerial coil L3 (on the Ferrox-rod) for max. Repeat.

(7) Disconnect the generator and check calibration with the receiver tuned to the Light Programme at 1500m (200 kc/s).



F.M. ALIGNMENT

I.F.:

Switch the receiver to F.M. and inject an unmodulated signal at 10.7 mc/s as at (1), with a 50μA meter in series with a 100K resistor or equivalent universal meter connected between Test Point 1 and chassis (meter nearest to chassis).

(8) Adjust the slugs of L7, L8 and L11 for maximum reading on the meter. Note the reading at this point.

(9) Connect the meter and resistor as above, between Test Point 2 and chassis, and adjust the slug of L12 to give a reading which is half that obtained at Test Point 1.

Repeat operations (8) and (9).

If it should become necessary to re-align the Tuner Unit, the following procedure should be adopted:—

I.F.:

(10) Inject an unmodulated 10.7 mc/s signal via a suitable.01 μF condenser between tag 4 on the Tuner Unit and chassis. Adjust the slugs of T1 (Tuner I.F. output transformer) for maximum reading on the 50 μA meter at Test Point 1.

Calibration:

(11) With the gang condenser fully open, the grub screw on the Tuner spindle must rest against the front (horizontal) stop.

Disconnect the generator and connect an F.M. aerial. With the receiver tuned to 93.5 mc/s, the pointer should be opposite the appropriate calibration dot, ($\pm \frac{3}{16}$" is permissible).

Adjust trimmers C3 and C11 if necessary.

DISMANTLING INSTRUCTIONS.

7701

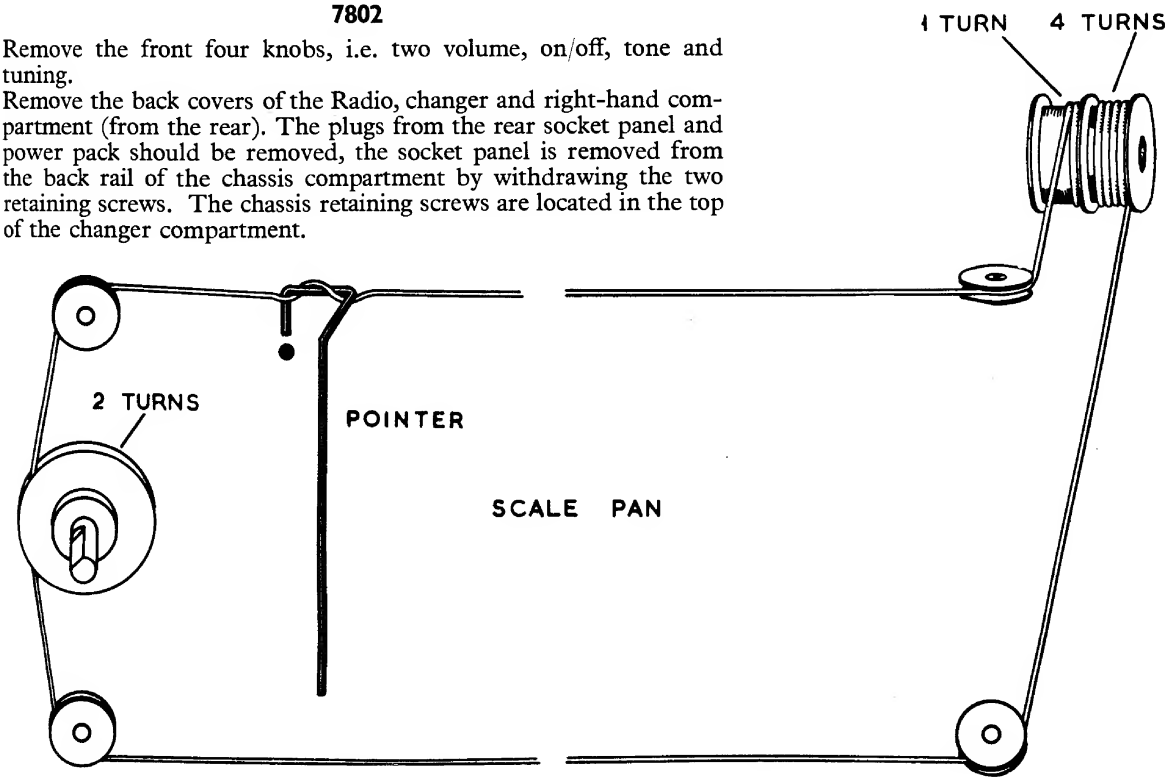
Remove the front four knobs, i.e. two volume, on/off, tone and tuning.
Remove the back covers of the radio compartment, changer and (from the back) right-hand loudspeaker compartments.
Withdraw the plugs from the rear socket panel, aerial, L.S., etc: also the plug from the power pack in the right-hand compartment, withdraw the record player shelf. The chassis can now be removed by unscrewing the holding down bolts from underneath this compartment, the retaining screws for the socket panel can also be removed. The power pack is held by screws which are withdrawn from underside of cabinet.

7802

Remove the front four knobs, i.e. two volume, on/off, tone and tuning.
Remove the back covers of the Radio, changer and right-hand compartment (from the rear). The plugs from the rear socket panel and power pack should be removed, the socket panel is removed from the back rail of the chassis compartment by withdrawing the two retaining screws. The chassis retaining screws are located in the top of the changer compartment.

7903

Remove the cabinet back from the Radio compartment, remove the panel carrying the AE, loudspeaker, P.U. etc: held by two screws. Detach the octal plug from the power pack.
To remove the chassis open the set as for normal tuning, pull off the four control knobs, then remove the two retaining clamps, one at each end of scale (each being held by two wood screws). Remove the scale, lifting it out of its bottom groove (replace in reverse way by placing the top end in first, and sliding bottom edge into groove). The chassis base board which slides into retaining slots is held by two bolts which are reached from the rear, base board is withdrawn from the front.
To remove Changer Unit, pull out the P/U plug and remove mains connection to the motor, this being accomplished by removal of the bottom panel, and the changer compartment panel on the back.
The 15 watt 230-240v lamp is fitted into the right-hand loudspeaker compartment, giving light to the record section, access from rear by removal of the appropriate panel. Care must be exercised to ensure that all leads are refitted in the same place from which they are removed, this will prevent hum being introduced.



DRIVE CORD ASSEMBLY
with the gang fully closed

ALL MODELS

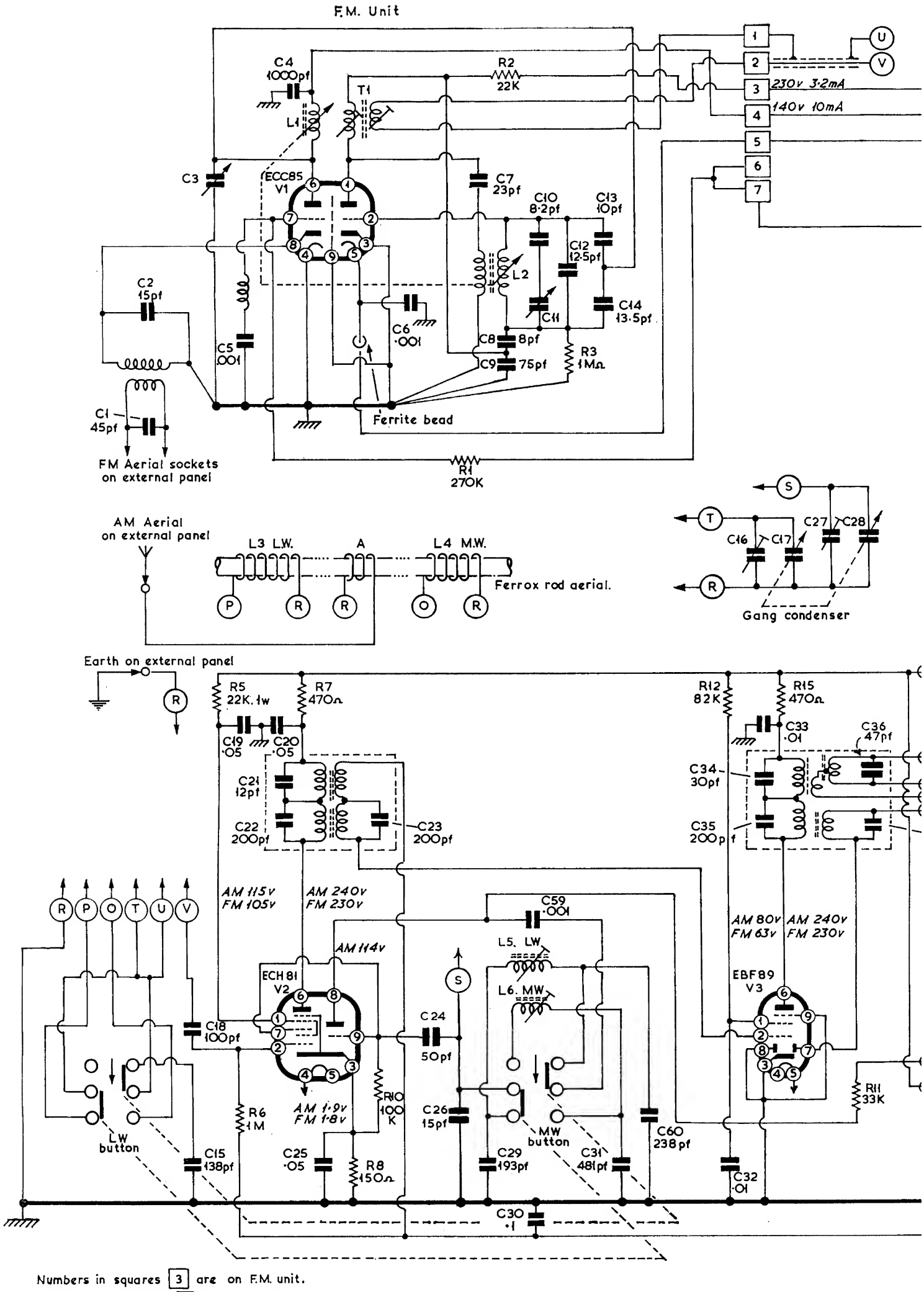
The changer unit is held by transit bolts which have turn over clips, these clips should be turned parallel to the transit bolts for withdrawal purposes. Care should be taken to ensure that wiring is replaced in the original locations.

CONTINUITY

No.	*Component*		*Ohms approx.*
T1	F.M. Tuner I.F.T.		
L3	A.M. Aerial Windings		4
L4			1
L5	A.M. Osc. Coils		9
L6			4
L9/10	1st A.M. I.F.T.	each winding:	10.5
L14/15	2nd A.M. I.F.T.	each winding:	10.5
L7	2nd F.M. I.F.T.		0.5
L8			0.75
L11	Ratio Detector Transformer		0.4
L12			0.25
L13			v. low
T4/5	Sound O.P.T.'s	primaries:	375
		secondaries:	0.25
T6	Mains Transformer primary:	0-200v	11
		0-215v	12.25
		0-235v	13.5
	secondaries:	H.T.	75+75
		heaters	v. low

SPARES

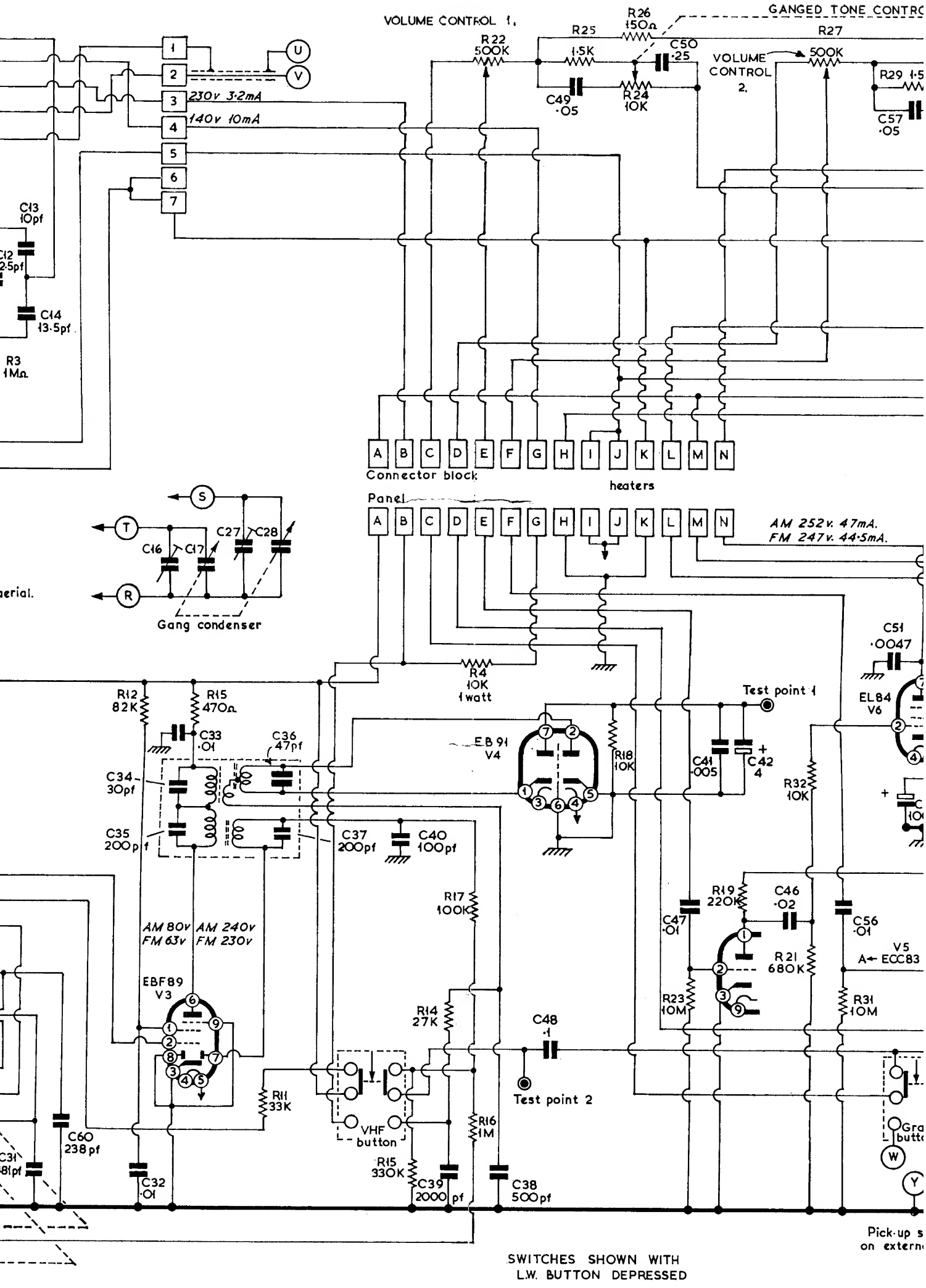
Item		*Part No.*
Mains T.X. T6	.....	12328
O.P.T.'s T4/5	.....	11411
Vol. Controls	Concentric 500K+500 K Log	12333
Tone Controls	Ganged 10K+10K Log with switch	12332
T2	Combined AM/FM I.F.T.	12330
T3	AM/I.F.T.+FM Ratio Det. Trans.	12331
Ferrox-rod Assy.	.....	12359
FM Tuner Unit	.....	12341
Scale	7903.....	13252
	7802.....	13251
	7701.....	13250



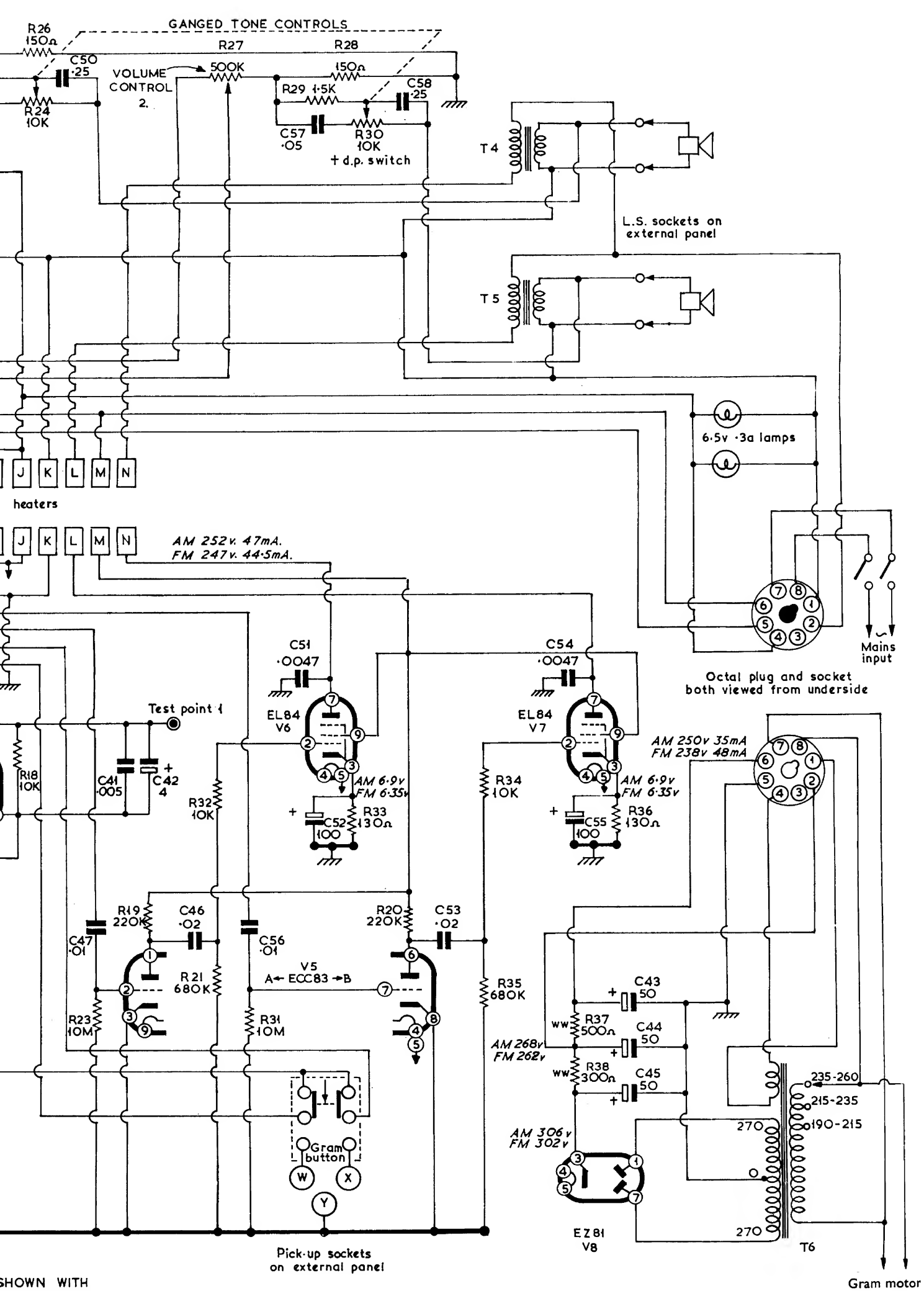
Numbers in squares [3] are on F.M. unit.

Letters in rectangles [A] are for panel and associated block connections.

Letters in circles (R) are panel fly lead connections, as shown on panel illustration.


VOLUME CONTROL 1.
R22 500K
R25 1·5K
R26 150Ω
GANGED TONE CONTRO
R27
C50 ·25
VOLUME CONTROL 2.
500K
R29 1·5
C57 ·05
C49 ·05
R24 10K
1
2
3
230v 3·2mA
4
140v 10mA
5
6
7
U
V
C13 10pf
C12 2·5pf
C14 13·5pf
R3 1MΩ
A B C D E F G H I J K L M N
Connector block
heaters
Panel
AM 252v. 47mA.
FM 247v. 44·5mA.
S
T
R
C16
C17
C27
C28
Gang condenser
erial.
C51 ·0047
R4 10K 1 watt
Test point 1
EL84 V6
R12 82K
R15 470Ω
C33 ·01
C36 47pf
EB 91 V4
R18 10K
C41 ·005
C42 4
R32 10K
C34 30pf
C35 200pf
C37 200pf
C40 100pf
R17 100K
AM 80v AM 240v
FM 63v FM 230v
EBF89 V3
R19 220K
C46 ·02
C47 ·01
C56 ·01
V5 A← ECC83
R21 680K
R23 10M
R31 10M
R14 27K
C48 ·1
Test point 2
R11 33K
VHF button
R16 1M
C60 238pf
C32 ·01
R15 330K
C39 2000pf
C38 500pf
W
Y
Pick-up s
on extern
SWITCHES SHOWN WITH
L.W. BUTTON DEPRESSED

tration.

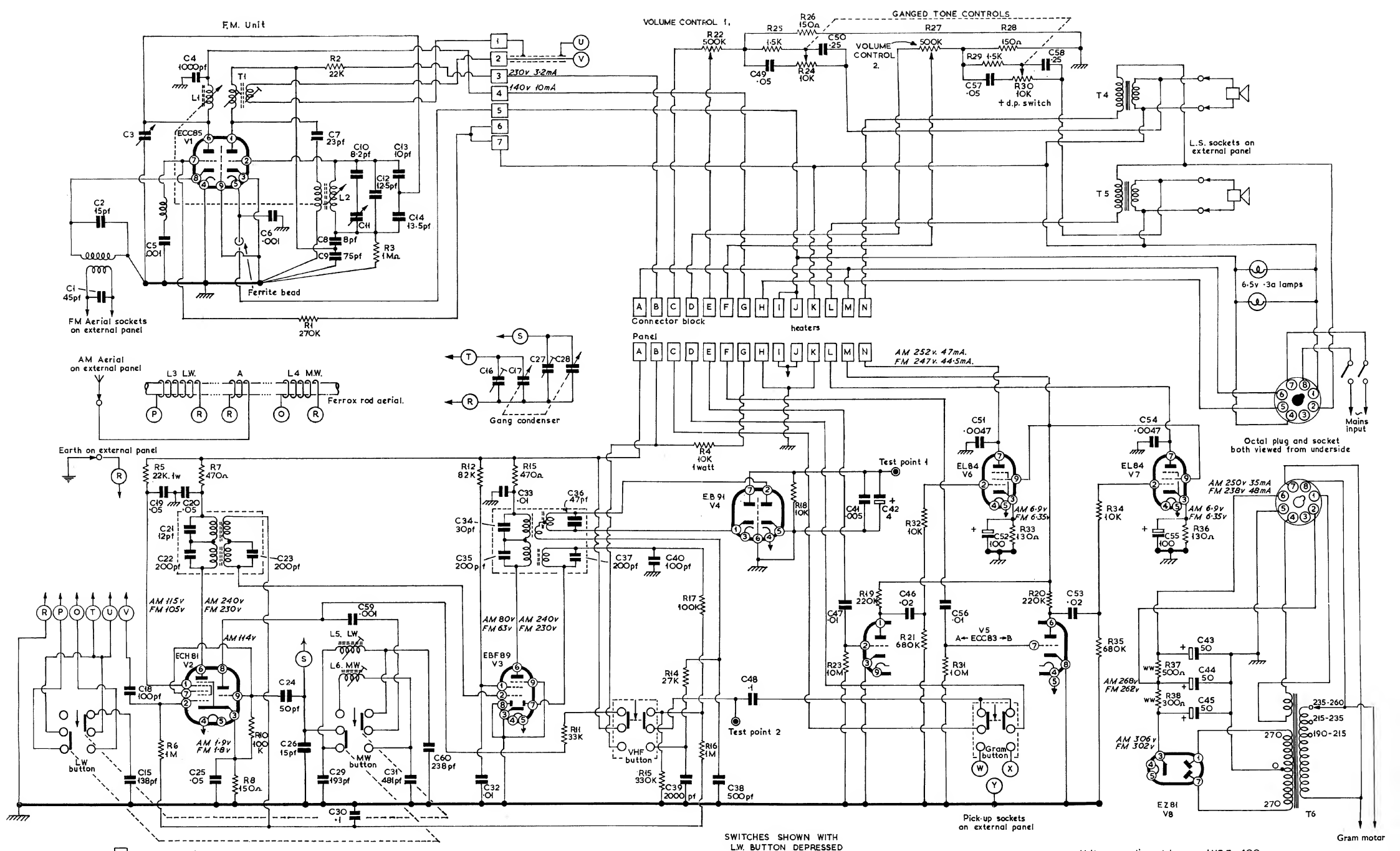


Voltage readings taken on AVO 7 – 400v range.

Cathode voltages taken on 10v range.

Mains input 235 volts RMS.

Condensers rated in μF, unless stated otherwise.



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